In the Claims:

1-61. (Canceled)

62. (Currently Amended) An infra-red imaging camera comprising:

an uncooled and unshielded detector comprising an array of infra-red (IR) sensors arranged to detect infra red radiated energy, said array comprising a plurality of IR sensors,

a non-uniformity corrector, associated with said detector, operable to perform non-uniformity correction on outputs of said array to provide uniform outputs having a uniform response to energy detected at said uncooled sensor, ~~and~~

a calibrator to carry out periodic calibration operations by taking at least one calibration temperature measurement of a temperature of a shutter of said camera while said shutter is closed, using a first temperature sensor located on said shutter, and to derive a reference temperature from said at least one calibration temperature measurement, said reference temperature being a temperature indicative of radiated energy not from an external scene, and a reference level comprising an average video signal of said IR sensors at the time of said calibration temperature measurement, said average being taken over said plurality of IR sensors, and to calculate a temperature of objects in said camera's field of view for each of said plurality of IR sensors from a difference between a respective uniform output of said sensor and said reference level, said temperature being calculated using a same signal to temperature function for each of said sensors, wherein said reference temperature is an offset of said function, and

focusing optics configured for gathering infra-red energy from an external scene, said focusing optics being entirely located to define an optical unit;

wherein said shutter is positioned between said optical unit ~~optics of said camera~~ and said detector.

63. (Previously Presented) The infra-red imaging camera of claim 62, configured to combine a value from an initial calibration temperature measurement with a second value taken from a second calibration temperature measurement, said combining using a time-dependent function, to produce extrapolations of said reference temperature for later points in time after said calibration temperature measurements.

64. (Previously Presented) The infra-red imaging camera of claim 63, wherein said time-dependent function comprises a mathematical extrapolation function from most recent calibration temperature measurements.

65. (Canceled)

66. (Previously Presented) The infra-red imaging camera of claim 62, wherein said calibrator is further configured to measure a respective second reference temperature during an external temperature measurement using a second temperature sensor located on a housing of said camera, wherein said respective second reference temperature is a further parameter of said signal to temperature function for said external temperature measurement.

67. (Previously Presented) The infra-red imaging camera of claim 62, having a camera thermal time constant of a first duration, and wherein said calibrator is configured to make a plurality of said calibration temperature measurements during said first duration.

68. (Previously Presented) The infra-red imaging camera of claim 62, wherein a first thermistor is located on a shutter of said camera, a second thermistor is

located on an external surface of detector's vacuum packaging of said camera and a third thermistor is located on a casing surrounding said optics of said camera, and wherein said calibration temperature measurement comprises taking readings from each of said thermistors.

69. (Previously Presented) The infra-red imaging camera of claim 62, wherein said shutter comprises a sheet having an emissivity substantially approaching 1 within a spectral frequency range used by said detector, and wherein said calibrator is configured to make a further calibration temperature measurement by measuring radiation from said shutter.

70. (Previously Presented) The infra-red imaging camera of claim 62, wherein said shutter comprises a sheet having a reflectivity substantially approaching 1 within a spectral frequency range used by said detector, and wherein said calibrator is configured to make a further calibration temperature measurement by measuring radiation reflected from said shutter, said radiation being indicative of a temperature of said uncooled detector.

71. (Previously Presented) The infra-red imaging camera of claim 62, wherein said uncooled detector comprises a microbolometer array.

72. (Previously Presented) The infra-red detector of claim 62, operable to make said calibration temperature measurements at an interval of time less than the camera thermal time constant.

73. (Canceled)

74. (Currently Amended) Temperature correction apparatus, for correcting a response of a radiometer in accordance with a local camera temperature, said radiometer comprising:

an unshielded uncooled infra-red (IR) detector comprising an array of IR sensors, said array comprising a plurality of IR sensors, configured for providing an image response in order to form a temperature image in accordance with IR radiation impinging on said IR detector's field of view (FOV), ~~and~~

focusing optics configured for gathering infra-red energy from an external scene, said focusing optics being entirely located to define an optical unit;

a shutter, configured for controllably obscuring said FOV, an internal face of said shutter forming a measurement surface for an internal temperature reference unit, wherein said shutter is positioned between said optical unit ~~optics of said camera~~ and said detector;

a non-uniformity corrector, associated with said detector, operable to perform non-uniformity correction on outputs of said array to provide uniform outputs having a uniform response to energy detected at said uncooled sensor,

said temperature correction apparatus comprising:

a temperature sensor configured for determining a local camera temperature while said shutter is closed using said measurement surface,

a referencer, configured for deriving a reference temperature from said local camera temperature, said reference temperature being a temperature indicative of radiated energy not from an external scene, and for using a response of said IR sensor to said local camera temperature to approximate a temporal effect of temperature drift of said local temperature; and

a signal corrector associated with said temperature sensor and said referencer, said signal corrector being configured to discount impinging IR radiation not from an external source by calculating a temperature of objects in said radiometer's field of view for each of said plurality of IR sensors from a

difference between a respective uniform output of said sensor and a reference level comprising an average video signal of said IR sensors at the time of said local camera temperature measurement, said average being taken over said plurality of IR sensors, said temperature being calculated using a same signal to temperature function for each of said uniform outputs, wherein said reference temperature is an offset of said function.

75. (Canceled)

76. (Previously Presented) Temperature correction apparatus according to claim 74, wherein said approximation is a mathematical functional approximation based on previous measured data.

77. (Previously Presented) Temperature correction apparatus according to claim 74, wherein said IR sensor array is operable to provide a two-dimensional image.

78. (Previously Presented) Temperature correction apparatus according to claim 74, wherein said IR detector comprises an array of microbolometers.

79. (Currently Amended) A method for correcting a response of an uncooled and unshielded a radiometer in accordance with a calibration temperature measurement, said radiometer comprising <u>focusing optics for gathering infra-red energy from an external scene, said focusing optics being entirely located to define an optical unit,</u> an array of infra-red (IR) sensors, for providing an image response in order to form a temperature image in accordance with IR radiation impinging on said IR sensor's field of view (FOV) , said array comprising a plurality of IR sensors, and a shutter, for controllably obscuring said FOV, wherein said shutter is positioned

between said optical unit ~~focusing optics~~ and said radiometer, said method comprising:

performing, while said FOV is obscured by said shutter, a calibration temperature measurement to determine a temperature of said shutter;

performing non-uniformity correction (NUC) on outputs of said array to provide uniform outputs having a uniform response to energy detected at said uncooled sensor;

deriving from said temperature of said shutter a first reference temperature, said first reference temperature being a temperature reflecting impinging IR radiation not from an external source;

determining a reference level comprising an average video signal, said average being taken over said plurality of IR sensors at the time of said calibration temperature measurement; and

calculating a temperature of objects in said radiometer's field of view for each of said sensors from a difference between a respective uniform output of said sensor and said reference level, said temperature being calculated using a same signal to temperature function for each of said uniform outputs, wherein said first reference temperature is an offset of said function.

80. (Previously Presented) A method according to claim 79, further comprising determining a time dependent response of said radiation sensor to said temperature of said shutter; and

using said time-dependent response in modifying said temperature calculations in between determinations of said reference temperature.

81. (Previously Presented) A method for correcting a response of a radiometer according to claim 79, further comprising filtering said corrected image response to compensate camera MTF effects.

82-83. (Canceled)

84. (Previously Presented) A method according to claim 79, further comprising measuring a respective second reference temperature during an external temperature measurement using a second temperature sensor located on a housing, wherein said respective second reference temperature is a further parameter of said signal to temperature function for said external temperature measurement.